

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 1, 3-6, 10-14, and 17-32 will be pending in the application subsequent to entry of this Amendment.

Counsel wishes to thank Examiner Parvini and Supervisor Jerry Lorengo for the courtesies extending during a telephone interview on April 16, 2009. Also joining in the telephone interview was Dr. J. Turner, a European patent attorney in London.

The amendments made to the claims as shown above were discussed during the interview as were the two main references cited and relied upon in the current Official Action. A flow chart comparing the Wheeler reference was discussed as was a flow chart illustrating the present invention and these flow charts are attached to this response. The claims have been amended as discussed during the interview and in more detail below.

Amendments to the Claims/New Claims

Claim 1 has been amended to refer to mechanical milling, based on page 10, lines 4 to 7 of the description.

Claim 1 has also been amended to specify that the milling fluid is selected from a “positive” list of compounds, namely glycols, ethers, ketonic species, heteroatom-containing compounds and lower mono and dialkyl ethers, esters and mixed ether esters of mono-, di- and tri-ethylene and propylene glycols. Basis for these milling fluids can be found at page 6, lines 1 to 3 and lines 16 to 18 of the description. The requirement that the milling fluid be “other than alcohols or esters” has accordingly been deleted. It is respectfully submitted that the examiner’s objection that claim 1 is indefinite because it recites both “glycols” and “other than alcohol” is now moot, because claim 1 of the Main Request no longer recites that the milling fluid is “other than alcohols or esters”.

Claim 1 also now specifies that the milling of the metal powder takes place in the substantial absence of water and hydrocarbon solvents, based on page 2, lines 28 to 29 of the description.

Finally, claim 1 has been amended to remove the requirement that the milling fluid be low volatility. This feature has now been placed in new dependent claim 32. Basis for the amendment can be found at page 3, line 4 of the description.

Claim 6 has been amended to refer to formation of granules, based on page 3, lines 15 to 17.

Original claims 2 and 7 to 9 have been deleted.

Response to Claim Clarity Rejections

The examiner has rejected claim 14 as being indefinite because it recites "propylene carbonate". The applicant respectfully submits that propylene carbonate falls under the category of "lower mono and dialkyl ethers, esters and mixed ether esters of mono-, di- and tri-ethylene and propylene glycols", now explicitly recited in claim 1. The other preferred compounds now recited in claims 13 and 4 also fall within this category.

Claims 13 to 16 have been revised in accordance with new claim 1.

The typographical error in claim 21 has been corrected responsive to the objection on page 2 of the Action.

Favorable consideration of the new and amended claims is requested.

Response to Prior Art-Based Rejection

Previous claims 1 to 9, 12 to 13, 17 to 20 and 22 to 31 were rejected under 35 USC 103(a) as being unpatentable over US patent number 4,725,317 to Wheeler (the patentee is also the inventor of the subject application), in view of US patent number 4,588,474 to Gross.

The processes described in Wheeler and the present invention are explained in more detail, to further illustrate the differences between them. *See* the attached flow diagrams, one setting out the process of the present invention, and the other the process of Wheeler. Both processes can be generally divided into a first part, "A", wherein metal powder is ball milled to provide metal flakes, and a second part, "B", relating to formation of a coherent paste of the metal flake pigment with an organic binder.

The subject matter of present claim 1 equates to step A. The paste composition of B is formed after further steps, and this is the subject matter of dependent claims in the present application (e.g. original claim 6).

In contrast, the focus of Wheeler is the second step, B. Step A is only briefly discussed in Wheeler, at column 2, lines 19-24 and in claim 9, and only mineral spirits are suggested as an example of the organic liquid used in this milling step. There is therefore no description in

Wheeler of milling a metal powder in a milling fluid selected from those set out in present claim 1.

It follows that the difference between the teaching of Wheeler and the present invention is the use of a milling fluid selected from glycols, ethers, ketonic species, heteroatom-containing compounds and lower mono and dialkyl ethers, esters and mixed ether esters of mono-, di-, and tri- ethylene and propylene glycols.

Wheeler describes milling of metal powder in mineral spirits. We note that the passage at column 2, lines 62 to 67 of Wheeler recites that "... any organic liquid... which is chemically inert with respect to the metal powder and binder... may be employed as organic liquid vehicle (emphasis added)". Thus this passage relates to the organic liquid vehicle that is mixed with the binder in the "first component" (see the "Wheeler" process flow diagram attached). As regards the organic liquid used in the ball milling step, Wheeler only exemplifies mineral spirits.

Even if the Examiner maintains that Wheeler describes a general use of an "inert solvent" in the ball milling step, it would not have been obvious to select the specific sub-set of milling fluids currently claimed. As explained in the present application as filed, only certain types of milling fluid will meet the objective of the present invention of reduced stockholding for the customer through the capability of the products of the invention to be employed satisfactorily in both solvent-based and water-based coatings (see page 3, lines 29 to 31 of the present application). These milling fluids typically meet the "highly desirable" and "desirable" criteria set out at page 5, lines 5 to 29. There is no teaching or suggestion in the prior art that use of milling fluids with such properties would be desirable. Still less is there any suggestion as to which fluids would be suitable to meet these requirements.

Furthermore, the skilled person would not have looked to Gross when seeking to find alternative milling fluids, for at least the following reasons. Gross is concerned with chemical milling of a "workpiece" to attack and remove metal with an acid or caustic solution, in order to form, for example, T-sectioned ribs or fillets (column 2, lines 47 to 48). Therefore the skilled person would not have turned to Gross when considering suitable fluids for use in mechanical milling of metal powder, where the intention is not to remove metal but rather to reduce it to a suitable size to form a pigment composition. Further, Gross describes milling in an aqueous solution (see, for example, claim 1), whereas present claim 1 recites milling in the substantial

absence of water. Ethylene glycol is described in Gross as improving results in chemical milling of Al 2219 sheet stock when added to a chemical milling solution comprising hydroxide and nitrate in an aqueous carrier (column 3, lines 9 to 16). The inventor himself admits that the part played by the glycol was not established (column 3, lines 23 to 24). Therefore there is nothing in Gross that would teach or suggest that ethylene glycol would be suitable or desirable for mechanical milling of metal powder, in the substantial absence of water, as required by the present invention.

Thus we respectfully submit that, for at least the above reasons, the subject-matter of the present claims would not have been obvious from any of the cited prior art, alone or in combination.

The Official Action includes in addition to the rejection discussed above separate rejections of claims 10, 11 and 14-16. These are all dependent claims and applicant submits that the combination of Wheeler and Gross do not render obvious the claimed invention because of all of the limitations of the independent claim are not fairly taught or suggested in the applied references. A separate rejection of these claims as being unpatentable over additional documents is traversed. The disclosures of these additional documents are not disputed here, but the opportunity to dispute them in the future is reserved.

As explained above, the combination of the Wheeler and Gross patents do not render obvious the claimed invention because all limitations of the independent claim are not fairly taught or suggested in these applied references. Moreover, claims depending from the independent claim are also not made obvious by the documents because the limitations of an independent claim are incorporated into their dependent claims. *See* MPEP §2143.03.

Withdrawal of all prior art rejections is requested because the claimed invention would not have been obvious to one of ordinary skill in the art at the time applicant made his invention.

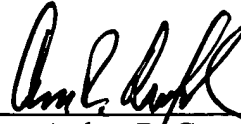
Having responded to all pending rejections contained in the Official Action, applicants submit that the claims are in condition for allowance and solicit an early Notice to that effect. The examiner is invited to contact the undersigned if any further information is required.

WHEELER
Appl. No. 10/551,774
April 21, 2009

Respectfully submitted,

NIXON & VANDERHYE P.C.

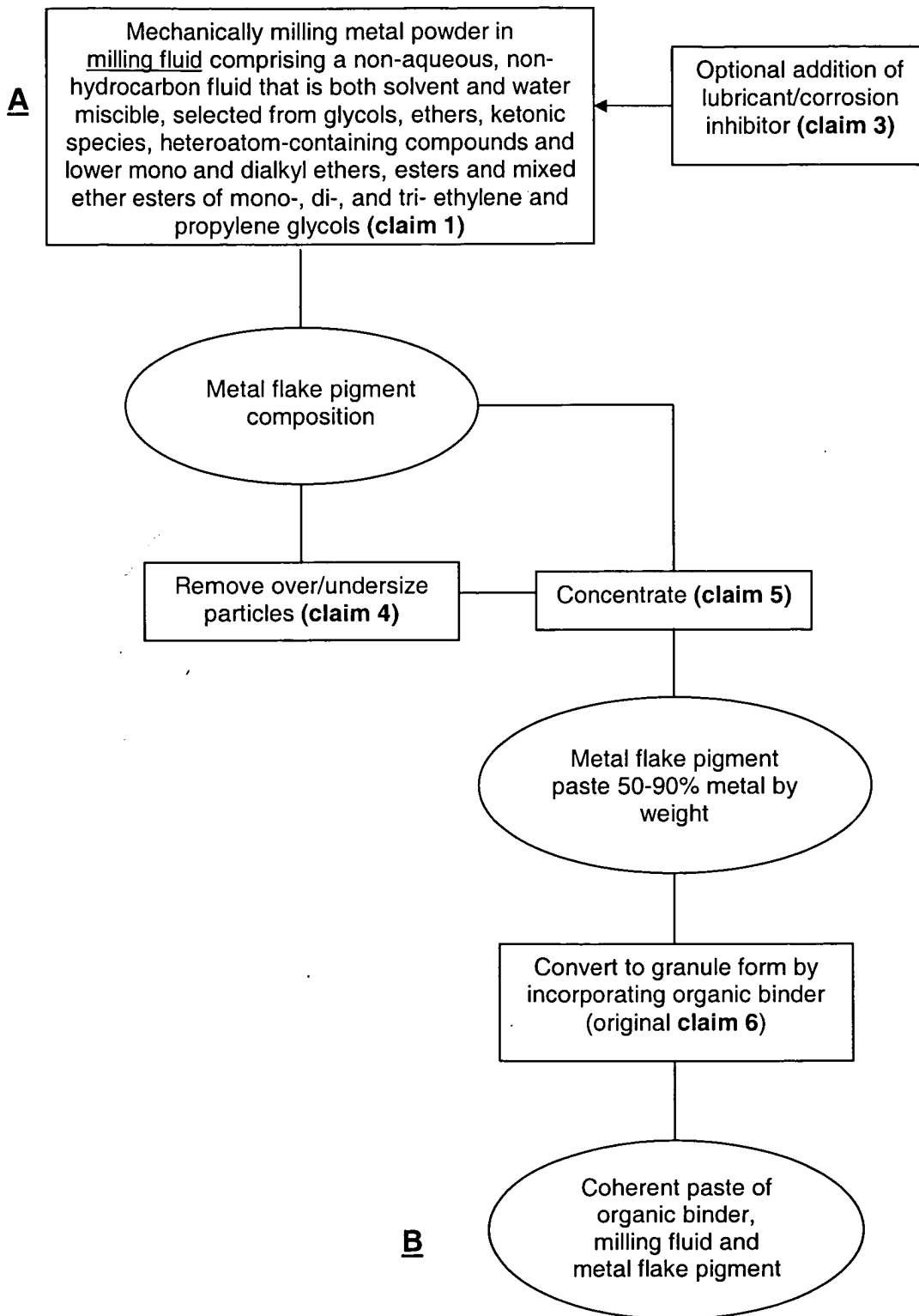
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Present invention:



Wheeler:

A

Wet ball-milling metal powder or chopped metal foil with an organic liquid such as mineral spirits (col. 2, l. 19-24; claim 9)

Separate metal flakes (wet-sieving) to produce desired particle size distribution

Bring to paste-like consistency of 55-80% metal by weight

"First component"
(organic binder +
organic liquid
vehicle)

"Second component"
(metal flake paste)

Mix

Coherent paste of
organic binder medium,
organic liquid vehicle
and metal pigment
(claim 1)

B

Sub-divide into
particles

Remove organic
liquid vehicle

Remove organic
liquid vehicle

Sub-divide into
particles

Solid low/non-
dusting metal
pigment composition